

WE CLAIM:

1. A method of increasing the reproductive performance of a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to improve reproductive performance of the female swine.
2. The method of claim 1 wherein the marine animal product is selected from the group consisting of a fish oil, a fish oil derived from a fish meal product, and a fish meal product or a mixture thereof.
3. The method of claim 1 wherein the marine animal product comprises a fish oil from a North Atlantic cold water fish.
4. The method of claim 3 wherein the fish oil comprises salmon oil.
5. The method of claim 1 wherein the feed composition further comprises omega-6 fatty acids or esters thereof.
6. The method of claim 5 wherein the omega-6 fatty acids/esters to omega-3 fatty acids/esters ratio in the feed composition as a final mixture is from about 3:1 to about 20:1.
7. The method of claim 1 wherein the omega-3 fatty acids comprise C₂₀ and C₂₂ omega-3 fatty acids.
8. The method of claim 4 wherein the feed composition as a final mixture comprises about 0.025% to about 1% by weight of salmon oil.
9. The method of claim 2 wherein the feed composition as a final mixture comprises about 0.025% to about 1% by weight of the fish oil.
10. The method of claim 4 wherein the feed composition as a final mixture comprises about 0.025% to about 2% by weight of salmon oil.
11. The method of claim 2 wherein the feed composition as a final mixture comprises about 0.025% to about 2% by weight of the fish oil.
12. The method of claim 2 wherein the feed composition as a final mixture comprises about 1% to about 10% by weight of the fish meal product.
13. The method of claim 1 wherein the feed composition is administered daily to the female animal.

14. The method of claim 1 wherein the feed composition is administered to the female swine beginning about 30 days before a first mating of the female swine during an estrus and continuing through a second mating of the female swine during the same estrus.

5 15. The method of claim 1 wherein the feed composition is administered to the female swine beginning about 1 to about 4 days prior to parturition and continuing through the next breeding.

16. The method of claim 1 wherein the feed composition is administered during lactation.

10 17. The method of claim 1 wherein the feed composition as a final mixture further comprises an antioxidant.

18. The method of claim 2 wherein the omega fatty acids in the fish oil are stabilized by prilling.

15 19. A method of increasing the number of live births to a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to increase the number of live births to the female swine.

20 20. A method of increasing the total number of births to a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to increase the total number of births to the female swine.

25 21. A method of decreasing the interval from weaning to estrus for a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to decrease the interval from weaning to estrus for a female swine.

30 22. A method of decreasing the interval from weaning to remating for a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products containing

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omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to decrease the interval from weaning to remating for a female swine.

23. A method of increasing the uniformity of birth weight of offspring of a female swine, comprising the step of administering to the female animal a biologically effective amount of a feed composition comprising marine animal products containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to increase the uniformity of birth weight of offspring of a female swine.

24. A method of decreasing pre-weaning death loss of the offspring of a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to decrease pre-weaning death loss of the offspring of the female swine.

25. A method of increasing the farrowing rate of a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to increase the farrowing rate of the female swine.

26. A method of increasing the fertility of a male swine, comprising the step of administering to the male swine a biologically effective amount of a feed composition comprising an oil containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the male swine to increase fertility of the male swine.

27. The method of claim 26 wherein the oil is a marine animal product.
28. The method of claim 26 wherein the oil is salmon oil.

29. The method of claim 26 wherein the oil is added to the feed composition in the form of fish meal.

30. The method of claim 26 wherein the oil is selected from the group consisting of a fish oil, an oil derived from a fish meal product, an oil derived from a plant, and an oil derived from ground seed, or a combination/mixture thereof.

31. The method of claim 26 wherein the increase in fertility of the male swine results from a decrease in the percentage of abnormal sperm.

32. The method of claim 26 wherein the oil comprises C₂₀ and C₂₂ omega-3 fatty acids and esters thereof.

33. The method of claim 28 wherein the feed composition as a final mixture comprises about 0.025% to about 1% by weight of salmon oil.

5 34. The method of claim 30 wherein the feed composition as a final mixture comprises about 0.025% to about 1% by weight of the fish oil.

35. The method of claim 28 wherein the feed composition as a final mixture comprises about 0.025% to about 2% by weight of salmon oil.

10 36. The method of claim 30 wherein the feed composition as a final mixture comprises about 0.025% to about 2% by weight of the fish oil.

37. The method of claim 29 wherein the feed composition as a final mixture comprises about 1% to about 10% of the fish meal.

38. The method of claim 26 wherein the feed composition is administered daily to the male animal.

15 39. The method of claim 26 wherein the feed composition as a final mixture further comprises an antioxidant.

40. The method of claim 26 wherein the omega-3 fatty acids in the oil are stabilized by prilling.

20 41. A method of increasing the reproductive performance of a breeding population of swine comprising the steps of:

administering to a female swine a biologically effective amount of a feed composition comprising marine animal products containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the female swine to improve reproductive performance of the female swine; and

25 administering to a male swine a biologically effective amount of a feed composition comprising an oil containing omega-3 fatty acids or esters thereof that serve as a source of metabolites in the male swine to increase fertility of the male swine.

30 42. A swine feed composition comprising an animal feed blend and marine animal products.

43. The swine feed composition of claim 42 wherein the marine animal products comprise salmon oil.

44. The swine feed composition of claim 43 wherein the feed composition as a final mixture comprises about 0.025% to about 1% by weight of salmon oil.

45. The swine feed composition of claim 43 wherein the feed composition as a final mixture comprises about 0.025% to about 2% by weight of salmon oil.

5 46. The swine feed composition of claim 43 wherein the salmon oil comprises omega-6 and omega-3 fatty acids and esters thereof.

47. The swine feed composition of claim 46 wherein the ratio of omega-6 fatty acids/esters to omega-3 fatty acids/esters in the feed composition as a final mixture is from about 3:1 to about 20:1.

10 48. The swine feed composition of claim 43 wherein the salmon oil comprises C₂₀ and C₂₂ omega-3 fatty acids and esters thereof.

49. The method of claim 46 wherein the omega-3 fatty acids in the salmon oil are stabilized by prilling.

50. A swine feed composition comprising an animal feed blend and marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, docosahexaenoic acid, and docosapentaenoic acid or a mixture thereof.

51. A swine feed composition comprising marine animal products that serve as a source of omega-3 fatty acids in the animal.

20 52. A swine feed composition comprising fish oil, a fish oil derived from fish meal, or fish meal products, or a mixture thereof that serve as a source of omega-3 fatty acids in the animal.

53. The swine feed composition of claim 52 wherein the omega-3 fatty acids are stabilized by prilling.

25 54. The swine feed composition of claim 52 wherein the feed composition as a final mixture comprises about 0.025% to about 1% by weight of the fish oil.

55. The swine feed composition of claim 52 wherein the feed composition as a final mixture comprises about 0.025% to about 2% by weight of the fish oil.

30 56. The swine feed composition of claim 52 wherein the feed composition as a final mixture comprises about 1% to about 10% by weight of the fish meal products.

57. A swine feed composition comprising a plant oil excluding flaxseed oil.

58. A swine feed composition comprising a plant oil derived from ground seed excluding flaxseed oil derived from ground seed.

59. A swine feed composition comprising a fish oil from a North Atlantic cold water fish that serves as a source of omega-3 fatty acids in the animal.

60. A method of increasing the reproductive performance of a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, docosahexanoic acid, and docosapentaenoic acid or a mixture thereof wherein the composition is administered for a time sufficient to increase the reproductive performance of the female swine.

61. A method of increasing the number of live births to a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, docosahexanoic acid, and docosapentaenoic acid or a mixture thereof wherein the composition is administered for a time sufficient to increase the number of live births to the female swine.

62. A method of increasing the number of total births to a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, docosahexanoic acid, and docosapentaenoic acid or a mixture thereof wherein the composition is administered for a time sufficient to increase the number of total births to the female swine.

63. A method of decreasing the interval from weaning to estrus for a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, docosahexanoic acid, and docosapentaenoic acid or a mixture

thereof wherein the composition is administered for a time sufficient to decrease the interval from weaning to estrus for the female swine.

64. A method of decreasing the interval from weaning to remating for a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, docosahexaenoic acid, and docosapentaenoic acid or a mixture thereof wherein the composition is administered for a time sufficient to decrease the interval from weaning to remating for the female swine.
65. A method of increasing the uniformity of birth weight of offspring of a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, and docosahexaenoic acid, docosapentaenoic acid or a mixture thereof wherein the composition is administered for a time sufficient to increase the uniformity of birth weight of offspring of the female swine.
66. A method of decreasing pre-weaning death loss of the offspring of a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, docosahexaenoic acid, and docosapentaenoic acid or a mixture thereof wherein the composition is administered for a time sufficient to decrease the pre-weaning death loss of the offspring of the female swine.
67. A method of increasing the farrowing rate of a female swine, comprising the step of administering to the female swine a biologically effective amount of a feed composition comprising marine animal products from which are derived omega-3 fatty acids selected from the group consisting of eicosapentaenoic acid, docosahexaenoic acid, and docosapentaenoic acid or a mixture thereof wherein the composition is administered for a time sufficient to increase the farrowing rate of the female swine.
68. A method of increasing the fertility of a male swine, comprising the step of administering to the male swine a biologically effective amount of a feed

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